

Remarks

Claims 1, 42-68, and 70-93 are pending. Please cancel claims 41 and 69. Claims 1, 42, 68, 70-72, 83, 86, and 89 are amended. The allowance of claims 78-82 is acknowledged with appreciation.

The drawings were objected to under 37 CFR 1.84, as being informal. A complete set of new formal drawings, in compliance with 37 CFR 1.121(d) are submitted herewith. Applicants solicit the acceptance of the replacement drawings and their placement in the application file.

Claims 1, 47-50, 83-86 and 89 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling. The rejection of claims 1 and 47-50 is overcome by amendment of claim 1. The Examiner indicated that claim 41 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Rather than rewriting claim 41, Applicants amend the base claim, claim 1, to import the limitations of claim 41. (There were no intervening claims.) Because claim 1 as amended now includes the subject matter of claim 41, claim 1 is in condition for allowance.

Claims 42-67 depend from claim 1. Claim 1 has been placed in condition for allowance, so claims 42-67 likewise are allowable.

The rejection of claims 83-86 and 89 over Schmitz et al. in view of Pulling is overcome by amendment to claim 83. The Examiner states that the Schmitz et al. device has its “first chamber (at inlet 12)” and a stem with its “distal portion (at 24) extending at least partially into said first (inlet) chamber” It also is observed in the patent to Pulling that the proximate portion of his “stem” (at 1) as well as the distal portion thereof (at 2) are *both* exposed and subject to high pressures from the high-pressure zone of the device. Pulling col. 1, lines 9-15; col. 2, lines 53-57; Fig. 1. Since both the distal part 2 and the proximate part 1 of Pulling’s stem extend into the high-pressure zone (in the vicinity of features 6 and 12 of the drawing), high pressure can force gas between the two parts 1 and 2 (along their threaded interface) and into the groove 8 in part 2. The result can be deleterious of even drastic ballooning of Pulling’s sealing

ring 9 from its recess, as high pressure between the sealing ring 9 and the distal part 2 force the sealing ring radially outward, out of the groove 8.

As amended, Claim 83 recites the following:

said distal portion and said proximate portion define an annular pocket for receiving said o-ring seat, said pocket having a void radially inward from said o-ring seat and between said seat and said stem;
and wherein further *said proximate portion is separated from said first chamber by said distal portion and said o-ring seat, whereby to isolate said void from said high-pressure zone.*

(Emphasis added.) These limitations, particularly the emphasized portion, from claim 83 are absent from Schmitz et al. and from Pulling. As the Examiner correctly noted in the Office Action, Schmitz discloses nothing of two-piece stems with o-rings. And, as explained immediately above, while Pulling has a two-piece stem and an o-ring, Pulling's proximate portion 1 is not separated from the high-pressure first chamber, but rather is directly exposed to it. Consequently, Pulling's device permits high pressure to drive gas along the threaded connection to the "void" 8 to potentially force the sealing ring 9 therefrom. Since the combination of Schmitz et al. and Pulling does not teach the advantageous limitations added to claim 83 — relating to separating the proximate portion of the stem from the first chamber — claim 83 as amended is distinguishable. Claim 83 is allowable over Schmitz et al. in view of Pulling.

Claims 84-88 depend from claim 83. Claim 83 having been placed in condition for allowance, these dependent claims likewise are allowable over Schmitz et al. in view of Pulling.

Independent claim 89 also stands rejected under 35 U.S.C. § 103(a) over Schmitz et al. in view of Pulling. The rejection is overcome by amendment. Claim 89 has been amended to recite that the nozzle has a "minimum diameter" and that the distal portion of the stem has "a diameter less than said minimum diameter of said nozzle, said distal portion." This feature, as now claimed, permits for very simply and quite preferable "top down" assembly of the apparatus, whereby the complete stem can be inserted down the axis of the apparatus. Support

for the limitation, and explanation of this benefit, is found in the specification at, for example, page 12, lines 3-10; page 18, lines 17-22; and page 21, lines 12-20.

The foregoing is in distinction from the devices of Schmitz et al. and Pulling, both of which employ distal stem portions (24 and 2, respectively) that have diameters far exceeding the diameters of their respective “nozzles” (26 and 5). According, claim 89, as amended, is allowable over these applied references. Dependent claims 88-93 are likewise allowable.

Claims 51 and 87 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling as applied to claims 1 and 83, and further in view of Whitener. These rejections have been overcome by the previously explained amendments to claims 1 and 83. Claim 1, as amended, requires that the nozzle have a convexly curved wall. The patent to Whitener does not teach or suggest this limitation to a “convexly curved wall” which is absent from Schmitz et al. and Pulling. Claim 51 depends from claim 1 as amended, and therefore is allowable. Claim 83 was amended to add that “said proximate portion is separated from said first chamber by said distal portion and said o-ring seat, whereby to isolate said void from said high-pressure zone.” Whitener does not teach or suggest this limitation (see, for example, Whitener Figs. 2-7). Thus, this limitation is not disclosed even when Whitener is combined with Schmitz et al. and Pulling; claim 87 depends from claim 83 as amended, and claim 87 accordingly is in condition for allowance over these references.

Claims 52 and 88 stand rejected over 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Lamb. Lamb shows the use of VITON® o-rings. However, VITON o-rings used in the manner taught by Lamb may be prone to deleterious combustion effects, and unacceptable wear, if used in oxygen systems; see Applicants’ specification, page 8, lines 3-11; page 4, line 26 to page 5, line 2; page line 6, lines 10-26.

In any event, Lamb does not disclose or suggest the limitations which were added to independent claims 1 and 83 to place them in condition for allowance over Schmitz et al. and Pulling. Claims because Lamb does not cure the lack of disclosure in Schmitz et al. and Pulling, claims 1 and 88, depending from claims 1 and 83, are allowable over the applied references.

Claims 53, 64-66 and 90-92 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Sebenste. These rejections are overcome by the amendments that have been made to independent base claims 1 and 89. Claim 1 now requires that the nozzle comprise a convexly curved wall. The device disclosed by Sebenste does not supply the teaching of a convexly curved wall in a valve-regulator nozzle. Because Sebenste does not supply the teaching present in claim 1 that results in claim 1 being allowable over Schmitz et al. in view of Pulling, dependent claims 53 and 64-66 are allowable for the reason that their base claim 1 is allowable. In a similar vein, claim 89 was amended to require the inclusion of “a distal portion having a diameter less than said minimum diameter of said nozzle, said distal portion extending at least partially into said first chamber.” As explained above, which explanation is here repeated by reference, this limitation is not suggested by Schmitz et al. in view of Pulling. Because it also is entirely absent from the disclosure of Sebenste, claims 90-92, which depend from claim 89, are allowable over Schmitz et al. in view of Pulling and further in view of Sebenste.

Claims 54 and 68 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Mims et al. The rejection of claim 54 is overcome by the amendment that has been made to independent claim 1, from which claim 54 depends. As amended, claim 1 requires that the nozzle comprise a convexly curved wall. The device of Mims et al. does not have a nozzle featuring a convexly curved wall. Because neither Schmitz et al. nor Pulling nor Mims et al. teach or suggest an apparatus having a “nozzle” with a “convexly curved wall” as required by independent claim 1, dependent claim 54 is allowable over those applied references.

Regarding claim 68, the rejection thereof over Schmitz et al. in view of Pulling and further in view of Mims et al. is overcome by amendment of the claim. The Examiner has indicated that claim 69 would be allowable if re-written in independent form including all of the limitations of the base claim, claim 68. Applicants adopt the Examiner’s suggestion by amending claim 68 to import the limitations of claim 69, and canceling claim 69. As amended,

claim 68 contains the allowable subject matter of claim 69, so claim 68 has been placed in condition for allowance.

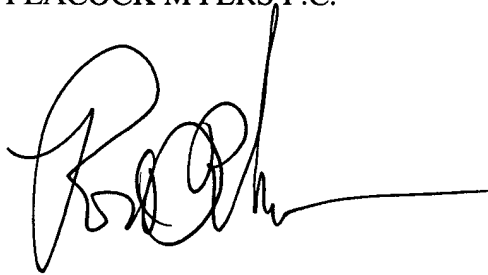
Claims 42, 70-72 are amended to adjust dependency. Claim 86 is amended slightly better to harmonize with its amended base claim.

Re-examination and allowance of the claims, as amended, is respectfully solicited. If the Examiner has any suggestions regarding this application, he is invited to call the undersigned.

Respectfully submitted,

PEACOCK MYERS P.C.

Date: December 1, 2005

A handwritten signature in black ink, appearing to read 'Rod D. Baker', with a long horizontal line extending to the right.

By:

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Attachment: Replacement drawing figures (eleven figures on nine sheets)